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The National Spatial Data Infrastructure: *The Next Frontier*

Long ago, a wise philosopher remarked that "information is power" and with power, we are able to progress and prosper. As our society embarks on the Age of Information, this observation rings truer today than ever before. Those working in the field of geomatics are especially conscious of this new age as they witness the emergence of technological and economic trends that are enabling powerful analytical and decision-making tools to increase value-added spatial information. To better understand these developments, Industry, Science and Technology Canada (ISTC) commissioned a team headed by Dr. John McLaughlin from the University of New Brunswick, to examine the strategic issues facing the geomatics industry. This article summarizes a key finding of *The Geomatics Industry Review*, the emergence of "national highways" of interconnected geomatics databases or "national spatial data infrastructure" (NSDI).

Under NSDI, public and private databases are linked together to provide readily accessible, wide ranging geographic information services to clients from research scientists to the general users. The infrastructure is made up of three specific components: 1) the actual databases; 2) the networking and communications systems, including the accompanying standards, access mechanisms and protocols; and 3) supportive public policies and institutional arrangements.

The benefits arising out of this movement towards NSDI will be immense — especially for those first pioneers who will be able to set the defining parameters for NSDI and therefore take advantage of the spin-offs in terms of a growing stock of value-added products and services. For those who rely on spatial data, NSDI will provide new and vastly improved sources of information at user friendly prices.

As these trends begin to unfold, it is of vital importance to ask — what roles will government play in the process?

First, governments are responsible for establishing general conditions, within the context of a market-based economy, which promote development and progress. This means ensuring that marketplace forces determine the hows and whens for infrastructure development as well as putting in place the public policies necessary to encourage this process. For the marketplace to be effective, there have to be clear cut rules (i.e. laws, regulations) on the ownership, access and privacy, pricing, and liability issues associated with spatial data. As well, there must be generally accepted standards that facilitate data exchanges between the various systems and users.

Secondly, governments are influential consumers of geomatics data and information and their consumption is on the rise. To meet their obligations to taxpayers, at a time of severe fiscal restraint, they must obtain the data in the most efficient and cost effective manner possible. This will mean revising internal policies that are unduly restrictive and establishing new forms of alliances between government and the private sector. Investments from private sector partners can help provide new resources not available from existing government budgets. To encourage private sector involvement, governments will need to formulate appropriate non-monetary incentives, such as exclusive licensing agreements that permit the private sector to sell the final product as well as services to external clients.

Presently, Industry, Science and Technology Canada, together with partners such as Energy, Mines and Resources Canada and the Geomatics Industry Association of Canada, are undertaking a broad competitiveness framework review of the geomatics industry's key strategic issues, such as NSDI, that need to be addressed from both the scientific and industrial development points of view.

At the height of the Age of Steam, Canada asserted its nationhood by building a transcontinental railway "network" from Halifax to Vancouver. Today, the National Spatial Data Infrastructure presents a similar opportunity. And just as the railway set the stage for new and expanded economic activity, NSDI also holds the door open to numerous direct and indirect economic and technological benefits. If it chooses, Canada can seize the geomatics initiative and set the future agenda for the Age of Information. It's up to all of us to act. You may obtain a copy of the *Geomatics Industry Review* by contacting Tom Bezanson, Consulting and Engineering Services Industries Directorate, Industry, Science and Technology Canada, 235 Queen Street, 7th Floor, West Tower, Ottawa, Ontario K1A 0H5.
Tel: (613) 941-2810; fax: (613) 941-8464.

IACG Activities

IACG Restructuring Underway

The IACG has been active in restructuring its activities, based on the approval of the IACG Strategic Plan by the steering committee in the spring of 1993. Recently, the IACG held a meeting that was also attended by Mr. Ed Kennedy, President of the Geomatics Industry Association of Canada, as well as by a number of federal government departmental representatives. At this meeting, the following Working Group arrangements were confirmed.

Number	Working Group Name	Chairperson
1	Coordination and Cooperation	Phyllis Charlesworth
2	Integration and Cooperation	Tim Evangelatos
3	Access and Marketing	Gordon Plunkett
4	Technology and Information Transfer	Andy Rencz

It was also agreed that the *Federal Geomatics Bulletin* would no longer be the responsibility of a single working group. The Editorial Board would be made up of members from all working groups and should report through the IACG Technical Secretariat.

The following agencies made presentations on their geomatics activities, which will assist in the general dissemination of information:

- Agriculture Canada
- Canadian Hydrographic Service (Fisheries and Oceans)
- Conservation and Protection (Environment Canada)
- Forestry Canada
- Geological Survey of Canada (Energy, Mines and Resources)
- Indian and Northern Affairs
- Directorate of Geographic Operations (National Defence)
- Geography Division (Statistics Canada)
- Transport Canada

The work plan for the IACG working groups for fiscal year 1993-94 is as follows:

- Provide on-line access to the IACG directory;
- Complete one additional update and prepare a plan for the maintenance of the IACG federal data directory;
- Publish two issues of the *Federal Geomatics Bulletin*;
- Organize the IACG booth at the Ottawa GIS Conference;
- Fund the operations of the Canadian General Standards Board - Committee on Geomatics;
- Organize several IACG workshops and seminars;
- Prepare a paper entitled "Barriers to the Use of Geomatics Data";
- Produce a Canadian GIS source book; and
- Operate the IACG Secretariat.

For further information on the activities of the IACG contact Dave Carney, Chairman IACG, Canada Centre for Mapping, Surveys, Mapping and Remote Sensing Sector, Energy, Mines and Resources Canada, 615 Booth Street, Ottawa, Ontario K1A 0E9. Tel: (613) 995-4643; fax: (613) 995-8737.

IACG Administrative Secretary Retires

Doug Selley, who has worked as the IACG Administrative Secretary since the Agency's inception, retired in June 1993 following a 43-year career in the Public Service of Canada. He has held positions in the Geodetic Survey of Canada, Surveys and Mapping Branch Headquarters, in the Canada Centre for Mapping and most recently in the Office of the Assistant Deputy Minister, Hugh O'Donnell. The IACG would like to wish Doug all the best in his retirement, and we thank him for his noteworthy efforts on our behalf.

IACG Seminar and Workshop

Dr. Michael Goodchild, Director of the National Center for Geographic Information and Analysis (NCGIA) in California , provided the keynote address and facilitated an IACG - sponsored workshop on data quality. Presenters from several federal departments provided views on topics from sources of data error to living with known error. A manual containing the presentations and related papers was provided to the participants at the workshop.

In addition, an IACG Seminar on the Application of GIS to Landslide Hazard Assessment was presented by Dr. K. Van Westin from the ITC in the Netherlands.

For more information, contact IACG Secretariat, GIS Division, Surveys, Mapping and Remote Sensing Sector, Energy, Mines and Resources Canada, 615 Booth Street, Ottawa, Ontario K1A 0E9. Tel.: (613) 996-2812; fax: (613) 952-0916.

Federal Geomatics Bulletin

This newsletter is intended as a vehicle for the communication of information on geomatics activities within the Canadian federal government. It is published twice a year under the auspices of the Inter-Agency Committee on Geomatics. Articles pertain to the methods, procedures and technology associated with systems for the collection, manipulation, display and dissemination of geographically referenced digital data. The editorial board consists of Gordon Plunkett (chairman), Martine Couture, David Ellwood, Jeffrey Murray, Nick Mosienko, Stefan Palko and Major Mark Phillips. Editorial and production support is provided by Diane Blondin, Barbara McAulay, Francine Mellor and Marguerite Trindade. Submissions for Volume 5, #2, which should be submitted before November 30, 1993, are most welcome. Subscription requests, queries, comments or submissions should be sent to: *Federal Geomatics Bulletin,* IACG Secretariat, GIS Division, EMR, 615 Booth Street, Ottawa, Ontario K1A 0E9. Fax: (613) 952-0916.

Do You Know Where Your Information Is?

Sound information management has always been fundamental to any government operation, but only recently has office technology, together with strong policy directions from Treasury Board, enabled government departments to view their information holdings as corporate assets. Up until the mid-1980s, most government departments could produce, on demand, a reasonably accurate listing of their desks, chairs, waste-paper baskets, and computers. Unfortunately, few had the same control over their information, even when a greater portion of departmental resources went into data acquisition and its day-to-day management.

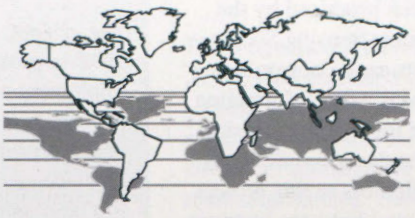
One of the key documents that has helped to re-shape departmental attitudes has been Treasury Board's policy on the Management of Government Information Holdings (MGIH), which was first announced in the summer of 1989. MGIH applies to all government information, regardless of its form or position in the information cycle — whether it be at the creation stage, in use, or at the final disposition stage. It serves as a companion to the National Archives of Canada Act, which protects the corporate memory of each department by prohibiting the destruction or the removal of government records from federal control without the consent of the National Archivist.

The 14-page MGIH policy calls for "designated senior officials" to be responsible for bringing together all information holdings within their departments so that managers will know what is available, where to find it, its medium (electronic or paper), and its format (textual, numeric, audio, visual, etc.). But MGIH is not just a simple inventory of holdings. It also challenges departments to acquire a clear picture of how their information hangs together, and to identify holdings that "serve to reconstruct the evolution of policy and program decisions or have historical or archival importance....".

The ultimate objective of Treasury Board's MGIH policy is the development of a "corporate" approach to information management. This approach can offer direct cost-benefits to those departments having proper control of their holdings, which is welcomed news in this era of resource cuts. For example, with sound information management, government departments can reduce storage costs for their records and speed employee access to departmental data. Without proper records, control departments run direful risks, as in the landmark case where the Federal Court found the Secretary of State for External Affairs and the Minister of Employment and Immigration in contempt because their staff could not produce documents required by the court in a reasonable time frame.

For further information regarding the implementation of the MGIH policy, please contact the Government Records Branch, National Archives, West Memorial Building, 344 Wellington Street, Ottawa, Ontario K1A 0N3. Tel.: (613) 947-1516; fax: (613) 947-1500. To obtain a copy of the MGIH policy, contact Canada Communication Group Publishing, Ottawa, Ontario K1A 0S9. Tel.: (819) 956-4802; fax: (819) 994-1498. Refer to Cat. No. BT52-6-6.

Canada Promotes Geomatics Overseas



The Government of Canada, through the Departments of Energy, Mines and Resources (EMR) and External Affairs and International Trade Canada (EAITC), have concluded a number of geomatics trade missions to various parts of the world. The Hon. Bill McKnight, former Minister of EMR and other officials have led delegations of Canadian business representatives in geomatics to several countries in the Middle East, the Caribbean, South East Asia as well as to Mexico.

Mr. McKnight noted: "For many years, Canada has been the world leader in the development and application of Geographic Information Systems.... A highly developed partnership between government and industry has allowed us to establish a competitive geomatics sector that is growing and prospering."

For further information on these trade missions, please write to, Office of External Relations, Surveys, Mapping and Remote Sensing Sector, Energy, Mines and Resources Canada, 580 Booth Street, Ottawa, Ontario K1A 0E4. Fax: (613) 943-8838.

Modernization Proposal for the Mexican National Geographic Information System

The Canada Centre for Geomatics (CCG) recently put its expertise into practice on the international scene. The Centre collaborated with the Canadian geomatics industry in response to an invitation by the Government of Mexico to tender a proposal to modernize the operations of the National Insitute of Statistics, Geography and Informatics (INEGI). The proposed solution was three-fold: a management proposal, a technical proposal and a financial proposal. CCG personnel completed, in a record time frame, the technical component of the winning proposal.

A team composed of SNC-Lavalin, Laser Scan, PGI (Photosur Geomat Inc.), Intera Technologies and CCG worked on site to implement the system and to train personnel.

For further information contact René Gareau, Director, Canada Centre for Geomatics, 2144 King Street West, Suite 010, Sherbrooke, Quebec J1J 2E8. Tel.: (819) 564-5600; fax: (819) 564-5698.

In this edition of the *Federal Geomatics Bulletin,* the name Department of Energy, Mines and Resources or EMR Canada has been retained. The new official name of the combined departments of EMR Canada and Forestry Canada is Natural Resources Canada.

New Digital Maps of Canada

A new generation of satellite maps and digital data sets for Canada has been produced by the Surveys, Mapping and Remote Sensing Sector, EMR Canada. The products are a cooperative effort of the Sector's National Atlas Information Service, the Canada Centre for Remote Sensing, the GIS Division and the Products and Services Division. Additional contributors to this project include the Petawawa National Forestry Institute of Forestry Canada, and the Manitoba Remote Sensing Centre of the Manitoba Ministry of Natural Resources. The imagery to produce these maps was obtained from Advanced Very High Resolution Radiometer (AVHRR) sensors operating on the U.S. National Oceanic and Atmospheric Administration (NOAA) satellites. The two maps are entitled *Canada - Satellite Image* and *Canada - Vegetation Cover*.

For more information concerning digital products, please contact Dan MacKay, Products and Services Division, 615 Booth Street, Ottawa, Ontario K1A 0E9. Tel.: (613) 992-4252; fax: (613) 995-6001.

To purchase the maps, contact the Canada Map Office, 130 Bentley, Nepean, Ontario K1A 0E9. Tel.: (613) 952-7000; fax: (613) 957-8861.

Digest Update and VmapC

The Digital Geographic Information Exchange Standard (DIGEST) Edition 1.1, published worldwide in October 1992, will soon be voted on by the Canadian General Standards Board - Committee on Geomatics (CGSB-COG), for acceptance as a nationally "defined" geomatics interchange standard.

Furthermore, the Department of National Defence (DND) has entered into negotiations with Energy, Mines and Resources Canada and the Canadian Hydrographic Service (CHS), Department of Fisheries and Oceans, for the co-production of a "Vector Smart Map" covering Canada - VMapC. This seamless dataset, in DIGEST format, will be derived from existing 1:250 000 sources: the National Digital Topographic Data Base (EMR); the *Natural Resource Map* along with digital files from CHS ; and, from analog Joint Operation Graphics (DND). For more information, contact Major Mark Phillips, D Geo Ops 5-3, Directorate of Geographic Operations, National Defence Headquarters, Ottawa, Ontario K1A 0K2. Tel.: (613) 996-2240, fax: (613) 996-3328.

Atlantic Coastal Zone Information Steering Committee

The Atlantic Coastal Zone Information Steering Committee (ACZISC) was founded in 1992, to provide a focus and forum for the development of a regional strategy to implement a coastal zone information infrastructure. The Committee strives to ensure a coordinated regional response to coastal zone information management. To accomplish this goal, it is liaising with the Working Groups of the IACG and the Committee on Geomatics of the Canadian General Standards Board, among other organizations.

The ACZISC currently consists of one representative from each of the four Atlantic Provinces and one from each of six federal government departments: Communications; Energy, Mines and Resources; Environment; Fisheries and Oceans; Public Works; and Transport, and one from the Council of Maritime Premiers. The Committee meets on a quarterly basis and rotates its meetings among the four Atlantic provincial capitals.

In order to fulfill its mandate, the ACZISC has adopted an ambitious workplan, including:

- The compilation and maintenance of the Atlantic Coastal Zone Database Directory consisting of 408 databases, the majority of which are geo-referenced. To order the Directory or to obtain further information, please contact Claudette LeBlanc, LRIS, Geographic Data Distribution, P.O. Box 310, Amherst, N.S.. B4H 3Z5. Tel.: (902) 667-7231; fax: (902) 667-6008.
- The formation of a working group on Standards for Coastal Zone Mapping, which is liaising with relevant federal and provincial organizations.
- The formation of a working group responsible for the technical program of the Coastal Zone Canada '94 Conference, to be held in Halifax, in September 1994.
- Providing the Canadian focus for the proposed East Coast of North America Strategic Assessment Project. The objectives of this joint Canada/US project are to enhance the ability of both Canada and the United States to assess the nature, condition and sensitivity of their respective valuable coastal and marine resources along the east coast of North America. An 18-month pilot project is provisionally scheduled to commence in the fall of 1993, and if successful, will lead to a long-term Canada/US East Coast of North America Strategic Assessment Program.

The mandate of the ACZISC involves coordination and liaison with numerous coastal zone programs being implemented at all levels of government, including:

- ICOIN (Inland Waters, Coastal and Ocean Information Network) (see *Federal Geomatics Bulletin*, Vol. 4, #1)
- Coastal Information Technology Architecture Plan
- Gulf of Maine Marine Environment Program (see *Federal Geomatics Bulletin*, Vol. 3, #2)
- Atlantic Geomatics Alliance.

The ACZISC represents a unique interdepartmental and intergovernmental initiative that addresses the requirement for a coastal zone information infrastructure in Atlantic Canada, the precursor to effective coastal zone management.

For further information on the ACZISC, please contact Michael Butler, ACZISC Chairperson, Council of Maritime Premiers, P.O. Box 2044, 5161 George Street, Suite 1006, Halifax, N.S. B3J 2Z1. Tel.: (902) 424-7614; fax: (902) 424-8976.

Our Home, the Atlas of Canadian Communities

Our Home, the Atlas of Canadian Communities is a digital atlas produced by and for young Canadians. This new education initiative is the result of a two- year partnership between the National Atlas Information Service (NAIS), the Canadian Association of Principals (CAP), Digimap and Eastman Kodak.

Marine Centre, Bonavista, Newfoundland, (Matthew Elementary School)

Over 2000 elementary and high school students from 120 communities from coast to coast participated in the project by providing various types of information concerning their home towns (local communities).

The atlas, available on CD-ROM, contains over 500 scanned photographic images representing the hometowns; maps of the National Topographic System (NTS) showing the boundaries of the communities, as researched by students; likes and dislikes, with regard to the communities, as expressed by the students; information concerning the origin of the place names, and a plethora of information relating to local history, the physical setting, famous people, things to do, industry and much more. The target audience for this atlas is secondary school students, with the hope that every school library in Canada will ultimately contain at least one copy of the CD-ROM.

For more information on this project, please contact Charles MacLean, National Atlas Information Service, 615 Booth Street, Ottawa, Ontario K1A 0E9.
Fax: (613) 943-8282.

You may obtain this atlas on CD-ROM format through the Canadian Association of Principals, 331 Somerset Street West, Ottawa, Ontario K2P 0J8.
Tel.: (613) 567-2616; fax: (613) 567-2135.

GIS Used To Produce Streamflow Map

In June 1990, the National Atlas Information Service (NAIS) of Energy, Mines and Resources Canada and the Surveys and Information Systems Branch (SISB) of Environment Canada undertook the joint development of a 5th Edition National Atlas map, describing Canada's surface water quantity characteristics. The partnership was formed to take advantage of Environment Canada's data and expertise on water resources, NAIS's map-making expertise, and recent advancements in geomatics.

Guided by the Green Plan, many of today's most pressing environmental issues are being looked at in relation to major drainage basins. The streamflow map provides information that may help to visualize the potential environmental impact of major developments such as hydroelectric projects.

In April 1993, the map Canada - Streamflow was published as one of the last maps of the 5th edition of *The National Atlas of Canada*. That same month, this map was awarded an Honourable Mention in the Professional Map Category at the 1993 Carto-Québec Map Competition in Drummondville, Québec.

For more information on this product, please contact Dan MacKay, Products and Services Division, 615 Booth Street, Ottawa, Ontario K1A 0E9.
Tel.: (613) 992-4252; fax: (613) 995-6001.

Copies of this map and other 5th edition maps can be obtained from the Canada Map Office, 130 Bentley Avenue, Nepean, Ontario K1A 0E9. Tel: (613) 952-7000; fax: (613) 957-8861.

GLOBESAR Radarsat Project Development Workshops

The International Development Research Centre (IDRC) has identified space-borne radar remote sensing as an information technology that can respond to concerns on improving methods of data collection and analysis in natural resources and environmental studies. IDRC plans to support a set of activities aimed at strengthening the capacity of researchers and practitioners throughout the developing world to benefit from new radar remote sensing technologies.

IDRC's radar technology activities will be incorporated with Canada's GLOBESAR initiative, led by the Canada Centre for Remote Sensing (CCRS). GLOBESAR is a four-year (1993-96) training and technology transfer project that involves a number of countries in Europe, the Middle East, Africa and the Asia/Pacific region. Its overall purpose is to increase users' operational application capabilities so that these countries can take advantage of the data that will be made available by the Canadian earth resources satellite, Radarsat, in 1995.

For additional information, please contact Djilali Benmouffok, International Development Research Centre, P.O. Box 8500, Ottawa, Ontario K1G 3H9.
Tel.: (613) 236-6163 Ext. 2469;
fax: (613) 563-3858.

Transfer of Canadian Technology to Eastern Europe

On behalf of Canada's Department of External Affairs and International Trade, Bureau of Assistance for Central and Eastern Europe, the Canadian Commercial Corporation (CCC) has awarded Geomatics International Inc. a $900,000 contract for the procurement of several remote sensing/geographic information systems for the Czech and Slovak Republics.

The project involves the design, implementation and training of GIS and remote sensing systems using Canadian software and hardware at four sites in the Republics. Ongoing support will be provided in these countries for pilot projects. They include: forest decline and environmental degradation in the Czech Republic; establishment of a remote sensing capability within the Slovak Centre for Aerospace Environmental Monitoring and, education and curriculum development at two university sites. A program of technology transfer will also be implemented for ongoing development of GIS and remote sensing capabilities.

For more information, please contact Bill Bruce, Canada Centre for Remote Sensing, 615 Booth Street, Ottawa, Ontario K1A OY7.
Tel.: (613) 996-2648; fax: 996-9843.

The Canadian Conference on GIS 1993 Conference Report

Dr Carlos M. Jarque gave the keynote address at GIS 1993.

The Fifth International Conference on Geographic Information Systems (GIS) 1993 was held from March 23-25 at the Ottawa Congress Centre. A total of 1300 persons from 21 countries attended the Conference, the workshops and the introductory courses on GIS. The products and services of over 40 companies and agencies were displayed in the exhibit area, and all exhibit spaces were sold out. The exhibitors were pleased with the large number of participants and the new exhibit area lay-out, and expressed their wish to return again next year.

The opening session had a distinctive Mexican flavour. Under the leadership of SMRSS, EMR Canada, Canadian firms recently won a multi-million dollar international bid to modernize Mexico's national geographic information system (GIS). This new partnership was evident during the opening ceremonies on March 23. As delegates arrived at the Conference, they were serenaded by a Mexican mariachi band. The musicians were a unique prelude to the keynote address delivered by Dr. Carlos M. Jarque, President of the National Institute of Statistics, Geography and Informatics (INEGI), Mexico. Dr. Jarque's presentation on the Modernization of the Mexican Geographic Information System was well received and praised by the participants.

Over 140 papers were presented as part of the technical program, which consisted of workshops, panel discussions, plenary sessions, concurrent sessions, and poster sessions. The program was varied, from hands-on workshops on Data Integration and GIS modelling, to discussions and presentations of issues on mapping systems, applications, human resources and training, management and standards on GIS.

The conference was organized by the Surveys, Mapping and Remote Sensing Sector (SMRSS) of Energy, Mines and Resources Canada, with the cooperation and support of the Canadian Institute of Geomatics and the Inter-Agency Committee on Geomatics. Throughout the week, the organizing committee received many compliments on the excellence of the Conference from delegates and exhibitors, who said it was the best Conference they had attended, especially with regard to the quality of technical program, the large number of delegates and the organization.

The Land Information Network for Canada

The Surveys, Mapping and Remote Sensing Sector (SMRSS) of EMR Canada recently conducted a major client survey and cost-benefit study. As a result, the Sector proposed to strategically move towards a geomatics information infrastructure known as the Land Information Network For Canada (LINC).

In November 1992, a project was launched with the mandate to develop a Land Information Network For Canada with the following objectives:

- to fulfill the clients' requirements for access to a fully integrated geomatics information system with built-in functionality for retrieving standard data products and generating custom products, and;
- to increase the effectiveness and efficiency of geomatics information acquisition as well as the management and dissemination of information, thereby reducing costs and duplication.

LINC will provide product and service integration for the Surveys, Mapping and Remote Sensing Sector. It will offer tools, methods, policies and standards for the management and distribution of essential geomatics data describing the Canadian landmass.

The essential components of LINC will include a communications backbone, a meta-data repository, query and integration services, accounting and access control services, data visualization and manipulation services, and a standard user interface. In addition to integrated access to geomatics data and geomatics tools, LINC will provide facilities for constructing business applications and interfaces for value-added products and services. Custodians will use LINC to provide access to their data, value-added participants will provide services through LINC, and a variety of clients will use it for finding, evaluating, and gathering information for their own applications.

The target system is intended to be operational in 1998. It will allow access to many on-line SMRSS databases and will permit coherent retrieval and joining of data from multiple databases. On-line ordering and off-line delivery will be available for analog SMRSS products. Canada-wide access to LINC will be available through broad band-wide area networks.

Over this five year period, the implementation of the Land Information Network For Canada will result in increased efficiency of processes, and, more importantly, will help to tailor digital products to better suit applications for clients in business.

For more information on the LINC project, please contact François Faucher, LINC Project Director, Surveys, Mapping and Remote Sensing Sector, 615 Booth Street, Ottawa, Ontario K1A 0E9. Tel.: (613) 992-0895; fax: (613) 992-4961.

The CCOGIF Standard

The Surveys, Mapping and Remote Sensing Sector (SMRSS), EMR Canada, is responsible for the National Topographic Data Base (NTDB).

Not only does SMRSS provide digital topographic data, the Sector is also able to supply standards and specifications for an interchange format that allows the transfer of digital topographic data regardless of their structuring level.

The CCOG Interchange Format (CCOGIF, or FECOCG in French) is primarily a standard vector data exchange format that sets out clearly how data must be structured (formatted) to be put on a medium (magnetic tape). This standard is complete and versatile, and can be used by anyone wishing to handle digital topographic vector data, whether simple or complex. In either case, CCOGIF can transfer the data. CCOGIF is not merely a standard; it is also a software package that allows the orderly input and retrieval of digital topographic information.

On a scale going from simpler to more complex, CCOGIF would be placed as follows relative to other data exchange formats:

Rudimentary				Complex				Very complex	
DGN	DXF	SIF (FEN)	DLG-E	CCOGIF (FECOCG)	MDIF	DIGEST	DX-90	SDTS	SAIF

The CCOGIF standards and specifications, with the software and its documentation, may be obtained by contacting Claude Gervais, Products and Services Division, 615 Booth Street, Ottawa, Ontario K1A 0E9. Tel: (613) 995-0314; fax: (613) 947-2189.
For further technical information, please contact the Canada Centre for Geomatics, 2144 King Street West, Suite 010, Sherbrooke, Quebec J1J 2E8. Tel: (819) 564-5600; fax: (819) 564-5698.

GIAC Develops Industry Competitiveness Strategy

The Geomatics Industry Association of Canada (GIAC) has published "Competitiveness Strategy for the Canadian Geomatics Industry", a blueprint for dealing with key issues in the geomatics industry. The strategy was adopted at a Stakeholders Seminar in October 1992. At this Seminar, 50 representatives from industry, government and academic sectors received a draft of the Strategy and agreed upon several amendments which were then incorporated into the final plan.

The Competitiveness Strategy is an ambitious undertaking to address a broad spectrum of competitiveness factors. Key issues identified by the Working Group included: industry-government working relations; dissemination of foreign market intelligence; skills upgrading and taxation and financing. Strategies have been formulated to improve overall industry competitiveness by taking specific actions to address these and related issues. Implementation of the Strategy commenced in late fall 1992, and is scheduled for completion by the end of 1993.

For more information on the competitiveness strategy, please contact Ed Kennedy, President, Geomatics Industry Association of Canada, 170 Laurier Avenue West, Suite 1204, Ottawa, Ontario K1P 5V5. Tel.: (613) 232-8770; fax: (613) 232-4908.

Two Conferences for the Price of One: A Unique Opportunity

One city, one site, two conferences for the price of one. In Ottawa, from June 6-10, 1994, the 6th Canadian Conference on Geographic Information Systems will join with the Symposium of the International Society for Photogrammetry and Remote Sensing (ISPRS) Commission II to present:

GIS — A Shared Vision

Conference participants will benefit from double the technical program, double the number of exhibitors, and double the fun. The ISPRS will bring new, challenging insight from all corners of the globe to be teamed up with the foremost GIS conference in Canada. The result will be a program spanning a wide range of technical expertise and the associated workshops, panels, papers and poster sessions.

An added dimension to the two-conference theme will be the social events. The ISPRS traditionally and successfully combines work and social activities, and this conference will be no exception. A full social and accompanying persons program will be organized for guests to enjoy some of the fabulous sights and events offered by Ottawa and the National Capital Region.

So, have a look at the Call for Papers found elsewhere in this Bulletin and consider writing a paper, or participating as an exhibitor or just attending. Whatever you do, reserve June 6-10, 1994, and come to Ottawa for the 6th Canadian Conference on GIS and the Symposium of ISPRS Commission II — and bring someone with you!

ISO 9000 Series International Standards for Quality Management

In a context of market globalization, there is a growing recognition of the fact that competitiveness for companies and countries must involve the adoption of internationally accepted quality standards and total quality management practices. Accordingly, at the seminar for geomatics interest groups held in Ottawa in October 1992, the Surveys, Mapping and Remote Sensing Sector (SMRSS) of Energy, Mines and Resources Canada, represented by Assistant Deputy Minister J.H. O'Donnell, proposed that the Canadian geomatics community adopt the total quality concept as the best way of maintaining and increasing the competitiveness of Canada's geomatics industry. To support the efforts of Canadian industry to become more competitive on the domestic and international markets, SMRSS has initiated a number of quality management activities, as follows:

- a viability and feasibility study on the implementation of the ISO 9000 standards; and
- a national program to promote excellence in geomatics.

The five international standards that make up the ISO 9000 series on quality assurance were developed by the International Organization for Standardization (ISO). The ISO is a world federation of national standards agencies. The Standards Council of Canada is Canada's representative within the federation.

The ISO standards involve technical specifications, not for goods and services produced, but rather for the systems required to produce them, thereby assuring clients, buyers and users that goods and services are consistent in quality.

The main standards of the series are ISO 9001 to 9004. Standards 9001 to 9003 provide three models for quality assurance in contract situations between buyers and sellers. These standards can be used as a reference for any organization wishing to set up a system of quality assurance for its own needs, and can also serve for compliance by a third party with the organization's quality assurance system. Certification could be used in contract situations.

Standard 9004 describes a set of elements that allow implementation of a quality management system within an organization. The quality assurance system proposed covers all stages, from initial determination of the client's requirements and expectations to a final product that satisfies the client. SMRSS is currently considering the possibility of adopting the 9000 series international quality standards developed by the International Organization for Standardization (ISO) as a quality standard for its products and services, and is promoting their adoption by the Canadian geomatics community. In this regard, SMRSS participates in the work of the Canadian General Standards Board's Committee on Directives, for implementing the ISO 9000 standards in government services.

In addition, the Canada Centre for Geomatics (CCG) of SMRSS has initiated a pilot project to assess the viability and feasibility of adopting the ISO 9000 standards for production of the National Topographic Data Base (NTDB). The aim of the project is to determine whether CCG can undertake a process for certifying its quality assurance system in accordance with one of the quality models of the ISO 9000 series, and whether it can require that its suppliers of geomatics products and services be accredited under the standards of the ISO 9000 series.

Following the findings of the study, a decision can then be taken concerning implementation of the ISO 9000 series standards in the Surveys, Mapping and Remote Sensing Sector and in contract situations. Under the competitiveness strategy for the Canadian geomatics industry, designed by the working group on competitiveness in the geomatics industry, SMRSS has developed a national program for the promotion of excellence in geomatics. Funding of $1.2 million has been allocated for this four-year program. The plan is that implementation of this program will involve the co-operation of the various interest groups in the Canadian geomatics community.

For further information, please contact Denis Beaulieu, Office of External Relations, SMRSS, 580 Booth Street, Ottawa, Ontario K1A 0E4.
Tel: (613) 992-1094; fax: (613) 943-8838.

GIS Calendar of Events

1993

October 12-14
IVHS Toward 2000, The Fourth Vehicle Navigation and Information Systems Conference, Ottawa. Canada. Contact Hugh Reekie, Box 3083, Station D, Ottawa, Ontario, Canada K1P 6H7. Fax: (613) 998-7008.

November 3-5
Geomatics IV: The New Synergy, Canadian Institute of Geomatics, Montréal, Quebec. Contact CIG, Montréal Branch, P.O. Box 1084, Station Desjardins, Montréal, Quebec, Canada H5B 1C2. Tel.: (514) 463-2988; fax: (514) 495-4191.

1994

February 21-24
GIS'94, Eighth Annual Symposium on GIS, Vancouver, Canada. Contact Paddy O'Reilly, Symposium Director, Suite 207, 1102 Homer Street, Vancouver, B.C., Canada V6B 2R9. Tel.: (604) 688-0188; fax: 1-800-661-0044 or (604) 688-1573.

June 6-10
6th International Conference on Geographic Information Systems and the Symposium of ISPRS Commission II, (Systems for Data Processing, Analysis and Representation), Ottawa, Canada. Contact Dr. Mosaad Allam, Chairman, 615 Booth Street, 7th floor, Ottawa, Ontario, Canada K1A 0E9.
Tel.: (613) 996-2812; fax: (613) 952-0916.

August 15-17
Global to Local: Ecological Land Classification, Forestry Canada and the Ontario Ministry of Natural Resources, Thunder Bay, Ontario. Contact Dr. R.A. Sims, Forestry Canada-Ontario Region, 1219 Queen Street East, Box 490, Sault Ste-Marie, Ontario, Canada P6A 5M7. Tel.: (705) 949-9461; fax: (705) 759-5700.